COURSE CODE : DDWD 1573
KOD KURSUS

COURSE NAME : PROGRAMMING FUNDMENTAL
NAMA KURSUS *ASAS PENGATURCARAAN*

YEAR / PROGRAMME : 1 DDWD
TAHUN / PROGRAM

DURATION : 3 HOURS (INCLUDING SUBMISSION HOUR)
TEMPOH *3 JAM (TERMASUK MASA PENGHANTARAN)*

DATE : NOVEMBER / DECEMBER 2021
TARIKH *NOVEMBER / DISEMBER 2021*

INSTRUCTION / *ARAHAN:*

1. The question paper consists of **3 PARTS**: A, B, and C.
    *Kertas soalan terdiri daripada **3 BAHAGIAN**: A, B, dan C.*

2. Answer **ALL** questions and write your answers on the answer sheet.
    *Jawab **SEMUA** soalan dan tulis jawapan anda pada kertas jawapan.*

3. Write your name, matric no., identity card no., course code, course name, section no. and lecturer's name on the first page (in the upper left corner) and every page thereafter on the answer sheet.
    Tulis nama anda, no. matrik, no. kad pengenalan, kod kursus, nama kursus, no. seksyen dan nama pensyarah pada muka surat pertama (penjuru kiri atas) kertas jawapan dan pada setiap muka surat jawapan.

4. Each answer sheet must have a page number written at the bottom right corner.
    Setiap helai kertas jawapan mesti ditulis nombor muka surat pada bahagian bawah penjuru kanan.

5. Answers should be handwritten, neat and clear.
    Jawapan hendaklah ditulis tangan, kemas dan jelas menggunakan huruf cerai.

This examination paper consists of **9** pages including the cover.
*Kertas soalan ini mengandungi **9** muka surat termasuk kulit hadapan*

ONLINE EXAMINATION RULES AND REGULATIONS
PERATURAN PEPERIKSAAN SECARA DALAM TALIAN

1. Student must carefully listen and follow instructions provided by invigilator.
   Pelajar mesti mendengar dan mengikuti arahan yang diberikan oleh pengawas peperiksaan dengan teliti.

2. Student is allowed to start examination only after confirmation of invigilator if all needed conditions are implemented.
   Pelajar dibenarkan memulakan peperiksaan hanya setelah pengesahan pengawas peperiksaan sekiranya semua syarat yang diperlukan telah dilaksanakan.

3. During all examination session student has to ensure, that he is alone in the room.
   Semasa semua sesi peperiksaan pelajar harus memastikan bahawa dia bersendirian di dalam bilik.

4. During all examination session student is not allowed to use any other devices, applications except other sites permitted by course lecturer.
   Sepanjang sesi peperiksaan pelajar tidak dibenarkan menggunakan peranti dan aplikasi lain kecuali yang dibenarkan oleh pensyarah kursus.

5. After completing the exam student must inform invigilator via the set communication platform (eg. WhatsApp etc.) about completion of exam and after invigilator's confirmation leave examination session.
   Selepas peperiksaan selesai, pelajar mesti memaklumkan kepada pengawas peperiksaan melalui platform komunikasi yang ditetapkan (contoh: Whatsapp dan lain-lain) mengenai peperiksaan yang telah selesai dan meninggalkan sesi peperiksaan selepas mendapat pengesahan daripada pengawas peperiksaan.

6. Any technical issues in submitting answers online have to be informed to respective lecturer within the given 30 minutes. Request for re-examination or appeal will not be entertain if complains are not made by students to their lecturers within the given 30 minutes.
   Sebarang masalah teknikal dalam menghantar jawapan secara dalam talian perlu dimaklumkan kepada pensyarah masing-masing dalam masa 30 minit yang diberikan. Permintaan untuk pemeriksaan semula atau rayuan tidak akan dilayan sekiranya aduan tidak dibuat oleh pelajar kepada pensyarah mereka dalam masa 30 minit yang diberikan.

7. During online examination, the integrity and honesty of the student is also tested. At any circumstances student is not allowed to cheat during examination session. If any kind of cheating behaviour is observed, UTM have a right to follow related terms and provisions stated in the respective Academic Regulations and apply needed measures.
   Semasa peperiksaan dalam talian, integriti dan kejujuran pelajar juga diuji. Walau apa pun keadaan pelajar tidak dibenarkan menipu semasa sesi peperiksaan. Sekiranya terdapat sebarang salah laku, UTM berhak untuk mengikuti terma yang dinyatakan dalam Peraturan Akademik.

Excerpts from online final exam guidelines
Petikan daripada panduan peperiksaan akhir dalam talian
Universiti Teknologi Malaysia

SECTION A / *SEKSYEN A*
TRUE OR FALSE QUESTIONS / *SOALAN BETUL ATAU SALAH*
10 MARKS / *10 MARKAH*

Instruction: Circle your correct answer in your answer sheet.

Arahan: Bulatkan jawapan yang betul di kertas jawapan anda.

1. Hardware is referring to any program that tells the computer systems what tasks to do and how to perform them.   True / False
    Perkakasan merujuk kepada mana-mana program yang memberitahu sistem komputer   *Betul / Salah*
    tugas yang perlu dilakukan dan cara melaksanakannya.

2. Local Area Network (LAN) is a network that links many individual computer and local area networks over a large geography area.   True / False
    Rangkaian Kawasan Setempat (LAN) ialah rangkaian yang menghubungkan banyak   *Betul / Salah*
    komputer individu dan rangkaian kawasan setempat di kawasan geografi yang besar.

3. UNIX is the example for an operating system.   True / False
    UNIX ialah contoh untuk sistem pengendalian.   *Betul / Salah*

4. Utility program is responsible for directing all computer operations and managing all computer resources.   True / False
    Program utiliti bertanggungjawab untuk mengarahkan semua operasi komputer dan   *Betul / Salah*
    mengurus semua sumber komputer.

5. Fortran is an example for high-level programming language.   True / False
    Fortran ialah contoh untuk bahasa pengaturcaraan peringkat tinggi.   *Betul / Salah*

6. `#include` is a pre-processor to define standard identifiers from standard library. True / False
    #include ialah pra-pemproses untuk mentakrifkan pengecam standard daripada   *Betul / Salah*
    perpustakaan standard.

7. Executable statements are a program lines that are converted to machine language   True / False
    instructions and executed by the computer.   *Betul / Salah*
    Pernyataan boleh laku ialah baris atur cara yang ditukar kepada arahan bahasa mesin dan
    dilaksanakan oleh computer.

8. Example of reserved word in C programming is `auto`.

   Contoh kata simpanan dalam pengaturcaraan C ialah auto.

   True / False
   Betul / Salah

9. Reserved word uses to name memory cells that hold data, program results and to name operations.

   Kata simpan pengguna digunakan untuk menamakan sel memori yang menyimpan data, hasil program dan untuk menamakan operasi.

   True / False
   Betul / Salah

10. The names Rate, `rate` and `RATE` are viewed by the compiler as same identifiers in C program.

    Nama Rate, rate dan RATE dilihat oleh pengkompil sebagai pengecam berbeza dalam program C.

    True / False
    Betul / Salah

    .

SECTION B / *SEKSYEN B*
STRUCTURED QUESTIONS / *SOALAN BERSTRUKTUR*
50 MARKS / *50 MARKAH*

Instruction: Answer *ALL* questions in your answer sheet.

Arahan: Jawab SEMUA soalan di kertas jawapan anda.

---

1. List **TWO (2)** different of Random-Access Memory (RAM) and Read Only Memory (ROM).   [4M]

   Senaraikan DUA (2) perbezaan Memori Akses Rawak (RAM) dan Memori Baca Sahaja (ROM).

2. Computer need software to function which are composed of two types that are system software and application software.

   Komputer memerlukan perisian untuk berfungsi yang terdiri daripada dua jenis iaitu perisian sistem dan perisian aplikasi

   a. Give a definition of application software and list **TWO (2)** example of application software.   [4M]

      Berikan definisi aplikasi sistem dan senaraikan DUA (2) contoh aplikasi sistem.

   b. Give a definition of system software and list **TWO (2)** example of system software.   [4M]

      Berikan definisi perisian sistem dan senaraikan DUA (2) contoh perisian sistem.

3. State either the following variable declaration is valid or invalid in C programming.   [6M]

   Nyatakan sama ada pengisytiharan pembolehubah berikut adalah sah atau tidak sah dalam pengaturcaraan C

Input / *Input*	Validity / *Kesahan*
`int 4ayam;`	
`int k4yuh;`	
`int return;`	
`float $tudent;`	
`char name [];`	
`char name = "Aminah"`	

4. Give **TWO (2)** example of programming high level language.   [2M]

   Berikan DUA (2) contoh bahasa aras tinggi pengaturcaraan.

5. Complete the program in table 1 by referring example of output

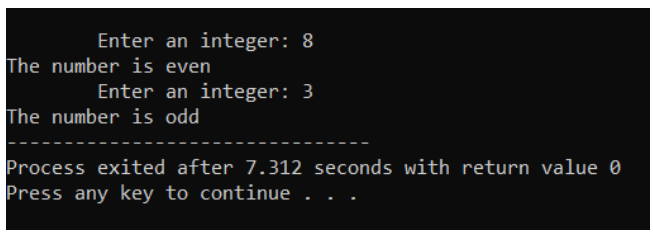   *Lengkapkan program di jadual 1 dengan merujuk contoh output* [10M]

```c```	

```
_____
int main()
{
int n;
     printf("\n\tEnter an integer: ");
     _____
if (_____)
     printf("The number is even ");
else if (_____)
     printf("The number is odd ");
else
     _____
return 0;
}
```

```
        Enter an integer: 8
The number is even
        Enter an integer: 3
The number is odd
-------------------------------
Process exited after 7.312 seconds with return value 0
Press any key to continue . . .
```

Table 1: Program and example output / *Jadual 1: Program dan contoh output.*

6. Trace the error in the program in table 2 below. [5M]

   Kenalpasti kesalahan pada program di jadual 2 di bawah

```c
#include <stdio.h>

float main () {
int menu, counter=0;
char name [20];
printf("How many menu that you want to enter : ");
scanf("%d",&stud);
printf("\n");

while(counter<stud) {
print ("\tPlease Enter %d menu: ", menu);
scanf("%d",&name);
menu++;
}
printf("\nThis menu will be available today! Thank you");
return 0;
}
```

Table 2: Program 2 / *Jadual 2: Program 2*

7. What is the following program fragment would display? Use # character to represent space. [5M]

   Apakah output bagi keratan aturcara berikut? Guna symbol # untuk mewakilkan satu aksara kosong.

```
a.  printf ("%4d\n",202);
b.  printf ("%f\n",451.9745632);
c.  printf ("%.4f\n",15.236754123);
d.  printf ("My name is %4c", 's');
e.  printf ("Total is: %d", 12.34);
```

8. Write a pseudocode that calculates y from the equation below, which values of x is between -4 and 4 in [10M] increment of 2. Display each value of x and y.

   Tulis kod pseudo yang mengira y dari persamaan di bawah dengan nilai x ialah antara -4 dan 4 dalam kenaikan 2. Papar setiap nilai x dan y.

$$y(x) = \begin{cases} -2x^2 + 5, & x \geq 0 \\ 2x^2 + 5, & x < 0 \end{cases}$$

SECTION C / *SEKSYEN C*

SUBJECTIVES QUESTIONS / *SOALAN SUBJEKTIF*

40 MARKS / *40 MARKAH*

Instruction: Answer *ALL* questions in your answer sheet.

Arahan: Jawab *SEMUA* soalan di kertas jawapan anda.

1. Convert decision table below to C program using `if else` selection. [10M]

    Tukarkan jadual keputusan di bawah kepada atur cara C menggunakan pilihan `if else`.

	Rules				
Conditions	**1**	**2**	**3**	**4**	**5**
C1. Ages > 18	Y	Y	N	N	N
C2. Member	Y	N	Y	N	N
C3. Transaction >500	Y	Y	Y	Y	N
Actions	**1**	**2**	**3**	**4**	**5**
C1. Discount	25%	5%	15%	10%	N
C2. Offer membership to customer	N	Y	N	N	N

    **Y=yes, N=No

2. Convert your C program in question 1 using `switch` case selection. [10M]

    Tukaran program C di soalan 1 menggunakan pilihan `switch` *kes.*

3.   Raju plan to open a restaurant. He wants to make a system to calculate menu ordered by customer. Write a C program that can do below operations. Student can refer sample output below for reference.

- Read the menu and quantity enter by user

- Calculate menu price

- Display total price

- This program will display invalid once user enter invalid input

Raju bercadang untuk membuka restoran. Raju mahu membangunkan sistem mengira harga menu yang ditempah oleh pelanggan. Tulis program C yang boleh melakukan operasi di bawah. Pelajar boleh merujuk sampel output di bawah sebagai rujukan.

- *Baca menu yang dimasukkan oleh pengguna*

- *Kira harga menu*

- *Paparkan jumlah harga*

- *Program ini akan memaparkan nilai tidak sah sekiranya pengguna memaksukkan nilai yang tidak sah.*

Menu / *Menu*	Price (RM) / *Harga (RM)*
Drinks	
1. Cold	2.00
2. Hot	1.00
Food	
1. Traditional	5.00
2. Western	8.00

Table 3: Raju Corner menu
Jadual 3: Menu Raju Corner

```
--------------------------
|Menu        | Price (RM)|
--------------------------
|     Drinks            |
--------------------------
|Cold        | Rm 2.00   |
|Hot         | RM 1.00   |
--------------------------
|     Food             |
--------------------------
|Traditional | Rm 5.00   |
|Western     | RM 8.00   |
--------------------------
Please Enter D for Drinks and F for Food         : f
Please Enter your quantity                       : 4
Please Enter T for Traditional and W for Western : t
The Price is Rm 20.00
        Do you want to continua (Y || N) : y
--------------------------------------------
Please Enter D for Drinks and F for Food         : d
Please Enter your quantity                       : 4
Please Enter C for cold and H for Hot            : h
The Price is Rm 4.00
        Do you want to continua (Y || N) : y
--------------------------------------------
Please Enter D for Drinks and F for Food         : f
Please Enter your quantity                       : 4
Please Enter T for Traditional and W for Western : x
Invalid input!
        Do you want to continua (Y || N) : n
        Your total payment is Rm 24.00
This program will terminated!
```

Figure 1: Sample Output
Rajah 1: Sampel Output

END OF QUESTIONS
KERTAS SOALAN TAMAT